

What is claimed is:

1. A method of detecting an abnormal response, the method comprising the steps of:
 - A) receiving a response generated by applying a stimulus to a body, the response comprising a complete set of frequencies;
 - B) combining transforms of each of plural subsets of the complete set of frequencies; and
 - C) comparing the combined transforms found in step B with a transform of the complete set of frequencies in the acoustic response.
2. The method of claim 1 in which the transform is a transform that results in a power spectrum of the frequencies contained in the response.
3. The method of claim 1 in which the response is an acoustic brainstem response generated by applying a stimulus to an ear.
4. The method of claim 2 in which combining transforms comprises the steps of:
 - B1) finding a transform of each of plural subsets of the set of frequencies; and
 - B2) summing the transforms found in step B1.
5. The method of claim 4 in which the transform is a transform that results in a power spectrum of the frequencies contained in the response.
6. The method of claim 5 in which the subset of frequencies of the acoustic response comprises the auditory brainstem response in a set of limited frequency ranges found by masking the acoustic response with white noise.
7. The method of claim 6 in which the subsets of the complete set of frequencies are found by the steps of:
 - obtaining an unmasked acoustic response;

obtaining masked acoustic responses by masking the stimulus with white noise in a frequency range;

subtracting the masked acoustic response of the highest frequency range from the unmasked frequency response to obtain a subset of the set of frequencies; and

subtracting the masked acoustic response from the next highest masked acoustic response for the remaining frequency ranges.

8. The method of claim 3 in which the method is used to predict the existence of a tumor.

9. The method of claim 5 in which comparing the sum of power spectra with the power spectrum of the set of frequencies in the acoustic response comprises normalizing the sum of power spectra to obtain a normalized sum and normalizing the power spectrum of the set of frequencies in the acoustic response to obtain a normalized reference and taking the ratio of the normalized sum and the normalized reference.

10. The method of claim 9 in which a higher ratio of the normalized sum and the normalized reference corresponds to a higher probability of the existence of a tumor.

11. The method of claim 9 further comprising the step of comparing the ratio of the normalized sum and the normalized reference to a ratio obtained from a group of people without abnormal auditory brainstem response.

12. The method of claim 9 further comprising the step of comparing the ratio of the normalized sum and the normalized reference to a ratio obtained from the opposite ear of an individual.

13. The method of claim 9 in which a peak in the range between 500 to 700 Hz is used as a predictor of the presence of a tumor.

14. The method of claim 13 in which the acoustic response is received differentially between a first electrode on the mastoid corresponding to the stimulated ear and a second electrode.

15. The method of claim 1 in which a combination of the plural subsets of the complete set of frequencies comprises a wide band response.

16. An apparatus for detecting abnormal auditory brainstem response, the apparatus comprising:

means for producing a broadband stimulus;

electrodes for sensing an auditory brainstem response; and

a processor connected to receive the auditory brainstem response, the processor being programmed to:

A) receive an acoustic response generated by applying a stimulus to an ear, the acoustic response comprising a set of frequencies;

B) find a power spectrum for each of plural subsets of the set of frequencies;

C) sum the power spectra found in step B; and

D) compare the sum of the power spectra found in step C with the power spectrum of the set of frequencies in the acoustic response.

17. The apparatus of claim 16 in which the subset of frequencies of the acoustic response comprises the auditory brainstem response in a set of limited frequency ranges found by masking the acoustic response.

18. The apparatus of claim 17, in which the processor is further programmed to find the plural subsets of the set of frequencies by the steps of:

a) obtaining an unmasked acoustic response;

b) obtaining masked acoustic responses by masking the stimulus with white noise in a frequency range;

c) subtracting the masked acoustic response of the highest frequency range from the unmasked frequency response to obtain a subset of the set of frequencies; and

d) subtracting the masked acoustic response from the next highest masked acoustic response for the remaining frequency ranges.

19. The apparatus of claim 16 in which the processor is further programmed to predict the existence of a tumor from the result of step D.

20. Apparatus programmed to carry out any one of the methods of claims 1-15.